

### Claims

What is claimed is:

1. A graphical compare utility system for displaying control programs for industrial control modules, the system comprising:
  - a conversion system operable to receive a first and a second control program and convert the first and second control program into a first and second data set representing individual instruction of the first and second control program; and
  - a viewing system operable to accept the first and second data sets and provide a graphical view of the first and second control programs in a single view based on the first and second binary data sets.
2. The system of claim 1, the graphical utility system providing indicators for insertions, deletions, modifications and moves of individual instructions between the first and the second control program.
3. The system of claim 1, the first and second control programs being a first ladder logic program and a second ladder logic program.
4. The system of claim 3, the individual instruction being rungs of the first and second ladder logic programs.
5. The system of claim 1, further comprising a difference module operable to determine differences between the first and the second control programs and provide a difference data structure representing the differences between the first and second control program.

6. The system of claim 5, further comprising a comparison module operable to receive the difference data structure and the first and second control programs and generate a plurality of comparison scenarios to provide a plurality of comparison set views.

7. The system of claim 6, further comprising a decision model operable to determine an optimal display set view from the plurality of comparison set views.

8. The system of claim 7, the decision model determining the optimal display set view from the plurality of comparison set views by maximizing individual instruction matches between the first and second control programs.

9. The system of claim 7, the decision model transmitting the optimal display set view to a viewing component, the viewing component mapping the optimal display set view to graphic components associated with an operating system, such that the optimal display set view can be provided to a display system for providing a graphical representation of the first and second control program in a single view.

10. The system of claim 1, further comprising a recursion tool to provide wrapping of the graphical view of the first and second control program, such that instructions of the control programs are wrapped in corresponding panes of a single frame window to avoid clipping of the instructions.

11. The system of claim 10, the recursion tool being coupled to window resizing and zooming features of the graphical compare utility system, such that the graphical view of the first and second control programs is dynamically adjusted when at least one of window resizing and zooming is invoked.

12. The system of claim 10, the recursion tool having an enabled state and a disabled state.

13. The system of claim 10, the recursion tool being operable to provide a printout of the graphical view of the first and second control program.

14. A graphical utility system for displaying two ladder logic control programs for industrial control modules in an adjacent configuration, the system comprising:

a conversion system operable to receive a first and a second ladder logic control program and convert the first and second ladder logic control program into a first and second binary data set representing individual rungs of the first and second ladder logic control program;

a difference module for determining differences between the first and the second binary data set and providing a difference data structure representing the differences between the first and second ladder logic control programs;

a comparison module operable to receive the difference data structure and the first and second control programs and generate a plurality of comparison scenarios to provide a plurality of comparison set views;

a decision model operable to determine an optimal display set view from the plurality of comparison set views; and

a viewing system operable to accept the optimal display set view and provide a graphical view of the first and second ladder logic control programs in an adjacent configuration.

15. The system of claim 14, the graphical utility system providing indicators for insertions, deletions, modifications and moves of individual rungs between the first and the second ladder logic control program.

16. The system of claim 14, the decision model determining the optimal display set view from the plurality of comparison set views by maximizing individual rung matches between the first and second ladder logic control programs.

17. The system of claim 14, further comprising a recursion tool to provide wrapping of the graphical view of the first and second ladder logic control programs, such that rungs of the control programs are wrapped in corresponding panes of a single frame window to avoid clipping of the instructions.

18. The system of claim 17, the recursion tool being coupled to window resizing and zooming features of the graphical compare utility system, such that the graphical view of the first and second ladder logic control programs are dynamically adjusted when at least one of window resizing and zooming is invoked.

19. The system of claim 17, the recursion tool having an enabled state and a disabled state.

20. The system of claim 17, the recursion tool being operable to provide a printout of two side-by-side graphical views of the first and second control program.

21. A method for displaying graphical representations of two control programs for industrial controllers, the method comprising:

retrieving a first control program and a second control program;

converting the first and second control program into a first and second data set representing individual instructions of the first and second control program; and

providing the first and second data sets to a graphical viewing system, the graphical viewing system being adapted to provide a graphical view of the first and the second control programs in a single view.

22. The method of claim 21, further comprising providing indicators for insertions, deletions, modifications and moves of individual instructions between the first and the second control program, the indicators being provided in the graphical view.

23. The method of claim 21, the first and second control program being a first ladder logic control program and a second ladder logic control program and the individual instruction being rungs of the first and second ladder logic control programs.

24. The method of claim 21, further comprising determining differences between the first and the second control programs and providing a difference data structure representing the differences between the first and second control program.

25. The method of claim 24, further comprising generating a plurality of comparison scenarios based on the differences to provide a plurality of comparison set views and selecting an optimal display set view from the plurality of comparison set views.

26. The method of claim 25, the selecting of an optimal display set view from the plurality of comparison set views comprising selecting an optimal display set view from the plurality of comparison set views by maximizing individual instruction matches between the first and second control programs.

27. The method of claim 26, further comprising transmitting the optimal display set view to a viewing component, the viewing component providing a graphical view of the first and second control program in a single frame window.

28. The method of claim 21, further comprising subjecting the graphical view to a recursive algorithm, such that instructions of the control program are wrapped in corresponding window panes of a single frame window to avoid clipping of the instructions.

29. The method of claim 28, further comprising dynamically adjusting the graphical view of the first and second control programs in response to at least one of window resizing and window zooming.

30. A system for displaying graphical representations of two control programs for industrial control modules in an adjacent configuration, the system comprising:

means for converting the first and second control program into a first and second data set representing individual instructions of the first and second control program;

means for determining the differences between the first and second control program based on the first and second data sets;

means for determining an optimal display set view based on the differences between the first and second control program; and

means for displaying the optimal display set view as a graphical view of the first and second control program, the means for displaying the optimal display set view providing indicators in the graphical view representing differences between the first and second control program.

31. The system of claim 30, further comprising means for wrapping instructions in the graphical view of the first and second control program.